

REVIEWS

Pollen Morphology and Plant Taxonomy. Angiosperms (An Introduction to Palynology.) By G. Erdtman. xii + 539 pages, 1 plate and 251 figures. 1952. Waltham, Massachusetts: The Chronica Botanica Company; San Francisco: J. W. Stacey, Inc. \$14.00.

This work, originating in the Palynological Laboratory in Stockholm, is a resumé of the structure of angiosperm pollen presented from a systematic point of view notwithstanding the fact that the plant families are arranged strictly alphabetically. The book is dedicated to I. W. Bailey, C. Skottsberg, and R. P. Wodehouse. In the foreword Professor H. Humbert of the National Museum of Natural History, Paris, reviews the subject and calls attention to its role as an introduction to palynology and to the ramifications and significance of palynology in science and industry.

In the preface the author points out that his aim is to present the basic principles of palynology as they apply to the main features of angiosperm pollen morphology, and not to present a comprehensive picture of pollen morphology. Your reviewer finds it difficult to discriminate between these subjects as presented in this work. Palynology, we learn, is a term coined by Hyde and Williams for that aspect of spore and pollen science dealing with the structure and markings of the wall, and is not concerned with the cytological interior. As we get into the subject we wonder if this does not make an artificial framework for the science of palynology, which appears to be bound together solely by the common uses, both scientific and practical, to which the characters of the durable spore and pollen coats can be put. The unity of palynology thus revolves around the use of the material rather than its character. This is analagous to the unity of palaeontology as standing apart from biology. The use to which fossils are put in interpretation, both geological and biological, and in science as well as industry, contributes a sense of unity however artificial, and adequately justifies the subject. But just as the biologist may regard the palaeontology of his group as an integral part of biology, so may the pollen morphologist insist that the palynology of pollen is an integral part of pollen morphology.

After a detailed discussion of the techniques developed for the study of palynology, the author goes into an intensive discussion of pollen and spore morphology. One is amazed at the compounding of the terminology that has engulfed such a tiny structure as the wall of a pollen grain or spore. Many terms are explained in the text, and at the end of the work there is a glossary of over 200 entries, many of which contain synonyms not separately treated. The feeling is gained that what the pollen grain lacks in size and structure is compensated for by the compounding of its terminology. Much of this is no doubt necessary and very useful, but I would like to reflect for a moment upon the problems raised.

It has been said that if we understood one another's language there would be little excuse for misunderstanding. There is in this idea an important lesson for those who would elaborate terminology. Special terminology can easily become the Biblical Tower of Babel that confounds understanding. Admitting that Latin is the language of scholars, and that language, within the framework of its rules, is a system of logic for the presentation of ideas, it would seem that the most effective presentation of any subject would lie in a language whose organization and terminology followed rules. To depart from this via the language of the specialist is to embark upon an empirical course which knows neither formalism nor rules, but becomes a lingo of convenience growing independently anew with each burst of

enthusiasm and understandable only to the chosen few. The scholar for instance, can find no linguistic formula for the understanding or interpretation of such words as *sexine* and *nexine* as compounded by the palynologist to convey his special meaning. Unless a glossary accompanies each work, the reader is forced to trace such terms back through the special literature until such time as these words find their way into a dictionary. Instead of compounding the linguistic roots of a noun and its modifying adjective, there are added, as prefixes to the word "*exine*," the letter "*s*" derived from the adjective "*sculptured*" and the letter "*n*" derived from the adjective "*nonsculptured*." Each prefix is supposed to impart the meaning of the adjective from which it was detached. This is not language! This is jargon! In a science as young as palynology it would pay even now to go back and reconstruct its terminology to make it linguistically understandable and give it the dignity of the language of scholars.

The main body of the work, however, is on a sound foundation and represents a significant contribution to scientific knowledge. In his presentation of a comparative resumé of the pollen characters of each family it is evident that the author is keenly aware of the taxonomic problems of an amazing number of plant families. In family after family the information presented delineates the existing problem in a manner that makes it clear whether or not palynology has anything to contribute toward the solution of the problem. As might be expected, it has much to contribute to some problems and nothing to others. Nevertheless palynology is an aspect of systematic botany that cannot be neglected. Through the techniques developed by Dr. Erdtman and other palynologists, the taxonomist is provided with a new set of comparable facts to employ in the synthesis of relationships.

To assess the usefulness of the work your reviewer sought to determine if the subject as presented made a contribution to several taxonomic problems of which he was aware. He was extremely gratified to find that it either provided additional concomitant characters to bolster ideas that lead one to differentiate groups, or it indicated that my previous doubts were supported by inconclusive evidence from palynology. In some cases evidence tended to refute ideas from other sources. This of course may work both ways in an argument. However we are only interested in the facts, and each interpreter may utilize them toward his objective as he may see fit. In the problems your reviewer chose to investigate, his own views were either satisfied or frustrated by the palynological evidence presented. The main point is that he found something that applied to each problem one way or the other.

In most families the discussion centers around the taxonomic subdivisions whereby genera are aggregated within the families. In addition, very often there is mention of evidence of relationship to other families, and similarities are often pointed out that stimulate questions. In some cases their resemblances seem possibly to have resulted from some aspect of parallel development.

The typography and the binding are excellent examples of the printers' art. In this epoch of expanding concepts of taxonomy, Dr. Erdtman's book will play a very important role by pointing the way to arrive at a host of new comparable facts about plants.—HERBERT L. MASON, Department of Botany, University of California, Berkeley.

The Fern Genus Diellia: its Structure, Affinities and Taxonomy. By WARREN H. WAGNER JR. Univ. Calif. Publ. Bot. 26:1-212. 1952. Plates 1-21. 31 figures in text. University of California Press, Berkeley. \$3.00.

Diellia is an endemic genus of Hawaiian ferns. Wagner recognizes five species, of which one, *D. unisora* (p. 160), is described as new.